UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/626,698	07/25/2003	Hong-Long Chou	TAIW 155	2688

7590 01/10/2007

RABIN & BERDO, P.C.
Suite 500
1101 14th Street, N.W.
Washington, DC 20005

EXAMINER	
CASCHERA, ANTONIO A	
ART UNIT	PAPER NUMBER
2628	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/10/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/626,698	CHOU ET AL.	
	Examiner	Art Unit	
	Antonio A. Caschera	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 October 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *9-18* is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in the pending application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kichury (U.S. Patent 6,057,850) in view of Teo (U.S. Patent 6,385,349).

In reference to claim 1, Kichury discloses a multilevel texture processing method for mapping an image onto a 3D model with a texture mapping (col. 2: 44-49), the method comprising the steps of:

- providing an image to the 3D model (col. 1: 40-54; col. 4: 33-35,30-33; col. 6: 64-65);
- converting the image and the texture mapping to a same spatial coordinate system and dividing them into a plurality of polygons (col. 1: 48-54; col. 4: 30-34; col. 7: 48-54; col. 7: 61 through col. 8: 14 and #408-414 of Figure 4, especially #411-

414, whereby for each polygon vertex, the texture image is mapped/transformed to. This is seen as functionally equivalent to Applicant's dividing into polygon);

- comparing the image with the texture mapping within the spatial coordinate system to extract overlapped polygons (Kichury discloses a depth setting function step and depth buffer enabling step (col. 6: 13-31 and #402 and 403 of Figure 4). Since Kichury discloses a depth buffer for overlapping objects and explicitly discloses enabling a "depth test" (col. 6: 27-28 and #403 of Figure 4), the Office interprets that such a test is functionally equivalent to the comparing the image with the mapping within a spatial coordinate system of Applicant's claim. Further, since the nature of depth testing or z-buffering is to display those polygons/objects which are closest to the user and hide those are farther away (col. 6: 18-23 of Kichury), the Office interprets that the depth testing further inherently "extracts" such overlapped objects);
- using a prescribed condition to select the texture of one of the image and the texture mapping as the texture of the polygon (col. 5:34-56, col. 6:12-31 and col. 7: 61-63. Kichury discloses utilizing polygon orientation or depth tests of image polygons).
- smoothing the texture of the polygon (col. 6: 32-47);
- making the pixels inside the polygon continuous (col. 7: 55-60; col. 8: 15-24); and
- restoring the polygon and storing the 3D model in memory (col. 4: 19-36, col. 5: 21-27 and col. 8: 34-41).

While Kichury discloses the method of multilevel texture processing method for mapping multiple images onto a 3D model with a texture mapping including comparing the image with the texture mapping within the spatial coordinate system and extracting overlapped polygons, Kichury does not specifically disclose wherein using the pixel intensity of the overlapped polygons to compute a statistics mean for adjusting the pixel intensity of the image accordingly. Teo discloses a system and method for merging a plurality of images which overlap wherein using the pixel intensity of the overlapped polygons to compute a statistics mean for adjusting the pixel intensity of the image accordingly (Figure 7C; column 10, lines 21-46; column 15, lines 44-56). It would have been obvious to one of ordinary skill in the art at the time the invention was made to integrate the teachings of Kichury and Teo to achieve a system and method in which multiple images are merged by properly aligning the images so that artifacts do not occur in view of different image lighting conditions and color characteristics (see column 8, lines 20-39 of Teo).

In reference to claim 2, Kichury and Teo disclose all of the claim limitations as applied to claim 1 above. In addition, Kichury discloses wherein the prescribed condition is selected from the group consisting of resolution, polygon orientation, and camera viewing perspective (col. 5:34-56, col. 6:12-31 and col. 7: 61-63. Kichury discloses utilizing polygon orientation or depth tests of image polygons).

In reference to claim 3, Kichury and Teo disclose all of the claim limitations as applied to claim 1 above. In addition, Kichury discloses wherein the step of smoothing the texture of the polygon includes texture normalization and texture blurring (col. 5: 24-33).

In reference to claim 4, Kichury and Teo disclose all of the claim limitations as applied to claim 3 above. In addition, Kichury discloses wherein the texture normalization uses the pixel intensities of the polygons in both the image and the texture mapping to compute a weighted average for adjustment (col. 5: 24-65. The equation (2) notes using image pixels and mappings via the light and direction vectors when texture normalizing).

In reference to claim 5, Kichury and Teo disclose all of the claim limitations as applied to claim 3 above. In addition, Kichury discloses wherein the texture blurring uses the textures of the polygon and its neighboring polygons to compute a weighted average for adjustment (col. 5: 24-28, 56-65; col. 6: 12-65).

In reference to claim 6, Kichury and Teo disclose all of the claim limitations as applied to claim 1 above. In addition, Kichury discloses wherein the step of making the pixels of the polygon texture continuous is achieved by mixing colors with the neighboring polygons (col. 6: 32-47).

In reference to claim 7, Kichury and Teo disclose all of the claim limitations as applied to claim 6 above. In addition, Kichury discloses wherein the step of mixing colors includes the steps of extracting a pixel on the border of the polygon with discontinuous colors and computing a weighted average of the intensities of the pixel and its nearest neighboring pixels as a new intensity of the pixel (col. 6: 32-55. Kichury explicitly discloses calculating pixel intensities in between vertices.).

In reference to claim 8, Kichury and Teo disclose all of the claim limitations as applied to claim 7 above. In addition, Kichury discloses wherein the step of computing a weighted average of the intensities of the pixel and its neighboring pixels as a new intensity of the pixel is followed

by the steps of computing the difference between the weighted average intensity and the original pixel intensity and using the pixel intensity difference to adjust the intensities of the rest pixels inside the polygonal texture (col. 6: 32-55. Kichury discloses calculating a gradient change from one vertex's color to another vertex's color, or computing and adjusting the difference of pixel intensities of the image polygon.).

Allowable Subject Matter

3. Claims 9-18 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

In reference to claim 9, the prior art of record does not explicitly disclose multilevel texture mapping an image onto a 3D model with further adjusting the pixel intensity of the image using the explicit formula as recited in claim 9, in combination with the further limitations of claim 9,

In reference to claims 10-18, claims 10-18 depend upon allowable claim 9 and are therefore also deemed allowable.

Response to Arguments

4. Applicant's arguments, see page 7 of Applicant's Remarks, filed 10/24/06, with respect to the objection of claims 9, 13, 17 and 18 have been fully considered and are persuasive. The objection of claims 9, 13, 17 and 18 has been withdrawn since amendments to the claims overcome the previous objection.

5. Applicant's arguments, see page 7 of Applicant's Remarks, filed 10/24/06, with respect to the 35 USC 112, 2nd paragraph rejection of claims 1-18 have been fully considered and are persuasive. The previous 35 USC 112, 2nd paragraph rejection of claims 1-18 has been withdrawn since amendments to the claims have overcome the previous rejection.

6. Applicant's arguments filed 10/24/06 have been fully considered but they are not persuasive.

In reference to claims 1-8, Applicant argues that Kichury does not disclose the step of comparing the image with the texture mapping within the spatial coordinate system to extract overlapped polygons (see pages 7-8, section of Applicant's Remarks). Further, Applicant states that the overlapping drawn objects of Kichury are to have the same depth values and cites column 6, lines 13-26, the Office disagrees. Kichury explicitly discloses a depth setting function step and depth buffer enabling step (see #402 and 403 of Figure 4) which indicates that overlapping drawn objects actually have different depth values (see column 6, lines 13-31). Since Kichury discloses a depth buffer for overlapping objects and explicitly discloses enabling a "depth test" (see column 6, lines 27-28 and #403 of Figure 4), the Office interprets that such a test is functionally equivalent to the comparing the image with the mapping within a spatial coordinate system of Applicant's claim. Further, since the nature of depth testing or z-buffering is to display those polygons/objects which are closest to the user and hide those are farther away (see column 6, lines 18-23 of Kichury), the Office interprets that the depth testing further inherently "extracts" such overlapped objects. Therefore, the Office maintains its rejection based upon Kichury.

References Cited

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

a. Fujiwara et al. (U.S. Patent 6,977,660 B2)

- Fujiwara et al. discloses generating a texture image from polygons of a 3D shape model on which editing or correcting operations can be easily performed.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Antonio Caschera whose telephone number is (571) 272-7781.

The examiner can normally be reached Monday-Thursday and alternate Fridays between 7:00 AM and 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kee Tung, can be reached at (571) 272-7794.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

571-273-8300 (Central Fax)

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (571) 272-2600.

aac
1/5/07

Antonio Caschera
Patent Examiner

KEE M. TUNG
SUPERVISORY PATENT EXAMINER